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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Israel RUBINSTEIN, et al
Serial No.: 09/922,220 Group No.: 1743
Filed: August 3, 2001 Examiner.: Lyle Alexander
For: METHOD AND APPARATUS FOR DETECTING AND QUANTIFYING A CHEMICAL SUBSTANCE EMPLOYING AN OPTICAL TRANSMISSION PROPERTY OF METALLIC ISLANDS ON A TRANSPARENT SUBSTRATE

Attorney Docket No.: U 013579-0

Mail Stop Petition
Commissioner of Patents
P. O. Box 1450
Alexandria, VA 22313-1450

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Practitioner's Docket No. U 013579-0 *PATENT*

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Petition Under 37 CFR § 1.181

In accordance with MPEP 1002.02(c) "Petitions and Requests Decided by the Technology Center Directors", section 3(a), **the Applicants petition to withdraw the finality of the Office Action mailed 13 December 2007 ("the Final Action" or "the action"), or, in the alternative, to reset the term for reply to the action after correction of the defects in the action.**

STATEMENT OF FACTS

The Final Office Action reads:

"*Claims 213-330 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Florin et al. (USP 5,792,667), Bowen et al. (USP 4,802,761) or Yee et al. (USP 5,858,799).*

All of these references teach method of sample analysis where the sample is contacted with on a metal island layer, a laser provides electromagnetic

radiation through the layer and a deviation in the surface Plasmon response are correlated to the identity of the sample".

This cursory summary of what the references allegedly disclose does not take into account or address many of the recitations in the claims. A copy of the claims presently on file is attached hereto.

The Office Action thus does not designate particular parts of citations on which the Examiner relies while rejecting the claims, even for a single citation out of the three new citations. And the Applicants did not find in each of these citations such elements as recited in the Final Office Action: "a structure comprising .... a plurality of spaced-apart metal islands" and a detector receiving a transmission of electromagnetic radiation emitted by a transmitter and transmitted through a structure comprising a plurality of spaced-apart metallic islands.

Moreover, the Office Action does not provide reasons for rejection of all dependent claims.

POINTS TO BE REVIEWED

(1) Whether the Action was sufficiently clear and complete as required under applicable USPTO rules, including 37 CFR 1.113; and

(2) Whether the action is deficient in not apprising Applicants of the manner in which the references are being applied to the claims so as to warrant correction of the action and resetting of the term for response.

ACTION REQUESTED

(1) Withdrawal of the finality of the Action; or

(2) Correction of the Action to make clear how the references are being applied to the claims of record and resetting of the term for reply.

ARGUMENT

The Applicants respectfully submit that the Office Action is unclear and incomplete and therefore its finality is contrary to 37 CFR 1.113 "Final rejection or action", stating (in all quotations emphasis added):

"... (b) In making such final rejection, the examiner shall repeat or state **all** grounds of rejection then considered applicable to the claims in the application, **clearly** stating the reasons in support thereof."

In the 12/13/2007 Office Action, which was made Final by the examiner, the examiner was convinced by the arguments and amendments and removed all rejections based on citations from the previous non-final Office Action, but introduced new 102(b) rejections of all claims based on three newly cited references. The facts upon which the Applicants rely for their contentions that the new Office Action is unclear and incomplete are set fourth above. The Applicants note that the standard of clearness and completeness, which the Office Action had to satisfy, is developed in MPEP §706.07, 37 CFR 1.104, and MPEP §2131.

In particular, MPEP §706.07, titled "Final Rejection", recites in section "Statement of Grounds":

"... In making the final rejection, all outstanding grounds of rejection of record should be carefully reviewed, and any such grounds relied on in the final rejection should be reiterated. **They must also be clearly developed to such an extent that applicant may readily judge the advisability of an appeal** unless a single previous Office action contains a **complete** statement supporting the rejection..."

Additionally, the 37 CFR 1.104 (Nature of examination) states:

In paragraph (b) - Completeness of examiner's action: "**The examiner's action will be complete as to all matters** ....."

In paragraph (c) – (2): "In rejecting claims for want of **novelty** or for obviousness, the examiner must cite the best references at his or her command. **When a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part relied on must be designated as nearly as practicable. The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified."**

Yet further, MPEP §2131 (Anticipation) states: **"In order to anticipate a claim, the reference much teach every element of the claim."**

MPEP §2131 also states: "A claim is anticipated **only if each and every element as set forth in the claim is found**, either expressly or inherently described, in a single prior art reference," *Verdegaal Bros. v. Union Oil Co. of California*, 814

F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)"; and "**The identical invention must be shown in as complete detail as is contained in the ... claim.**" *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)".

The Applicants have considered the Final Office Action against the above clarity and completeness requirements.

As discussed in the Statement of Facts, the only reasoning provided by the Examiner as to why he contends the references anticipate the invention as claimed is as follows:

> "*Claims 213-330 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Florin et al. (USP 5,792,667), Bowen et al. (USP 4,802,761) or Yee et al. (USP 5,858,799).*
>
> *All of these references teach method of sample analysis where the sample is contacted with on a metal island layer, a laser provides electromagnetic radiation through the layer and a deviation in the surface Plasmon response are correlated to the identity of the sample".*

The Office Action thus does not designate particular parts of citations on which the Examiner relies while rejecting the claims, even for a single citation out of the three new citations. And the Applicants did not find in each of these citations such elements as recited in the Final Office Action: "a structure comprising .... a plurality of spaced-apart metal islands" and a detector receiving a transmission of electromagnetic radiation emitted by a transmitter

and transmitted through a structure comprising a plurality of spaced-apart metallic islands.

Moreover, the Office Action does not provide reasons for rejection of all dependent claims.

In addition, the Applicants note that the lack of clarity and completeness in the present Final Office Action is repetitive of the lack of clarity in previous office actions, wherein Applicants were left to guess how references were being applied. This is reflected in the Applicants' Response filed 10/04/2007, wherein the Applicants had to (a) request the Examiner to elucidate in subsequent actions, if any, the reasons for rejection of each of the dependent claims (on page 25 of said Response); (b) remind the Examiner about the requirements for completeness of the Examiner's actions (on page 25 of said Response); (c) admit that only after the interview with the Examiner on 09/22/2007 the Applicants understand how the Examiner **might be** interpreting the terms of the claims and applying the references thereto (on pages 25-26 of said Response); (d) in this view had to rescind and withdraw all previously made arguments and statements; and (e) still, in view of the unclarity remaining after the interview, had to present arguments for **two possible readings** of the Examiner's rejection (see pages 28-29 of said Response).

In view of the above, Applicants respectfully submit that (a) the Action is unclear and incomplete, and (b) is defective in not providing Applicants with information sufficient to allow them to understand how the references are being applied so as to be able to reply. Accordingly, Applicant respectfully request withdrawal of the finality

of the Office Action mailed 13 December 2007 or, in the alternative, a resetting of the term for reply after the deficiencies in the Office Action are first corrected in a manner that apprises Applicants of how the references are being applied to the claim recitations in the independent and dependent claims of record.

Respectfully submitted,

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IN THE **CLAIMS:**

Claims 1 - 212 (cancelled)

Claim 213. (currently amended) A method for analysis of a sample comprising:

~~configuring a transmitter to emit chosen electromagnetic radiation;~~

transmitting electromagnetic radiation being emitted by a ~~said~~ transmitter through a first structure comprising a substantially transparent substrate carrying a plurality of spaced-apart metallic islands; receiving a transmission of said electromagnetic radiation by a detector, and generating a first measurement indicative of the received transmission, said first measurement being representative of a surface plasmon absorption of said plurality of metallic islands in the transmitted first structure;

adsorbing a chemical substance from the sample onto said first structure so as to produce a second structure substantially transmitting with respect to said electromagnetic radiation, said second structure comprising said substrate and a moiety, wherein this sampling moiety includes the sampled chemical substance and said plurality of metallic islands, said second structure thereby having a second different plasmon absorption characteristic;

transmitting electromagnetic radiation being emitted by said transmitter through said second structure, receiving a transmission of said electromagnetic radiation by a detector, and generating a second measurement

indicative of the received transmission, the second measurement being representative of the second surface plasmon absorption of said plurality of metallic islands in the transmitted second structure; and

comparing said first and second measurement representative of the surface plasmon absorption of the first and second structures, respectively, said comparing identifying plasmon absorption, said identifying allowing generation, based on the identified plasmon absorption, of at least one of a quantitative indication and a qualitative indication of at least one of the following: the sampling moiety, a functionality of the sampling moiety, said plurality of metallic islands, a functionality of said plurality of metallic islands, the sampled chemical substance, and a functionality of the sampled chemical substance.

Claim 214. (previously presented) A method according to claim 213, wherein said first structure, comprising said substrate with said plurality of metallic islands, carries a moiety including a chemical substance and said plurality of metallic islands, this chemical substance being selected to adsorb thereon the chemical substance for sampling, the moiety thereby serving as adsorbing moiety for the sampled chemical substance, this adsorbing moiety including the adsorbing chemical substance and said plurality of metallic islands, this adsorbing moiety thereby capable of forming the sampling moiety upon the adsorbance of the sampled chemical substance thereon, said sampling moiety thereby comprising, upon its formation, said plurality of metallic islands, said sampled chemical substance, and the adsorbing chemical substance.

Claim 215. (previously presented) A method according to claim 214, wherein said first structure consists essentially of said substrate, carrying said adsorbing moiety, and said adsorbing moiety.

Claim 216. (previously presented) A method according to claim 214, wherein said first structure comprises an intermediate layer, carrying said adsorbing moiety and being carried by said substrate.

Claim 217. (previously presented) A method according to claim 215, comprising producing said first structure by adsorbing the adsorbing chemical substance onto the plurality of metallic islands.

Claim 218. (previously presented) A method according to claim 216, comprising producing said first structure by adsorbing the adsorbing chemical substance onto the plurality of metallic islands.

Claim 219. (previously presented) A method according to claim 214, wherein the transmitting electromagnetic radiation is emitted by a laser.

Claim 220. (previously presented) A method according to claim 214, wherein the transmitting electromagnetic radiation is transmitted through a filter monochromator being upstream the transmitted structure.

Claim 221. (previously presented) A method according to claim 220, wherein said monochromator is between said transmitter and said sample.

Claim 222. (previously presented) A method according to claim 214, wherein said detector is a spectrophotometer.

Claim 223. (previously presented) A method according to claim 214, wherein said transmitter performs spectral scanning.

Claim 224. (previously presented) A method according to claim 214, comprising performing a baseline correction procedure for said transmitter.

Claim 225. (previously presented) A method according to claim 214, comprising performing said measurements in a baseline correction mode of said transmitter.

Claim 226. (previously presented) A method according to claim 214, comprising using a reference beam for said electromagnetic radiation.

Claim 227. (previously presented) A method according to claim 214, comprising recording a baseline of said transmitter.

Claim 228. (previously presented) A method according to claim 214, wherein said transmitter comprises a light source being externally placed with respect to the

structure, said light source emitting said electromagnetic radiation.

Claim 229. (previously presented) A method according to claim 214, wherein the electromagnetic radiation transmitted through said second structure is further transmitted through the sample.

Claim 230. (previously presented) A method according to claim 213, wherein said first structure consists essentially of said substrate carrying said plurality of spaced-apart metallic islands.

Claim 231. (previously presented) A method according to claim 214, and wherein said adsorbing said sampled chemical substance comprises producing at least one of the following interactions between the sampled chemical substance and the adsorbing substance: a hydrogen bond, an ionic bond, a covalent bond, a Van der Waals force, an electrostatic force, and a physical force.

Claim 232. (previously presented) A method according to claim 214, wherein said emitted electromagnetic radiation comprises electromagnetic radiation in the ultraviolet/visible/ infra-red range.

Claim 233. (previously presented) A method according to claim 214, wherein said emitted electromagnetic radiation comprises electromagnetic radiation in the range of 300-1100 nm.

Claim 234. (previously presented) A method according to claim 214, wherein said emitted electromagnetic radiation is in the ultraviolet/visible/infra-red range.

Claim 235. (previously presented) A method according to claim 214, and wherein said emitted electromagnetic radiation is in the range of 300-1100 nm.

Claim 236. (previously presented) A method according to claim 214, and wherein said comparing comprises determining a change in a surface plasmon absorbance of said plurality of metallic islands between said first and second measurements.

Claim 237. (previously presented) A method according to claim 214, and wherein each of said first and second measurements comprises a peak of maximal absorbance.

Claim 238. (previously presented) A method according to claim 214, and wherein said comparing said first and second measurements comprises determining a change in plasmon absorbance of said electromagnetic radiation at a specific wavelength.

Claim 239. (previously presented) A method according to claim 214, and wherein each of said first and second measurements comprises a real-time measurement.

Claim 240. (previously presented) A method according to claim 214, and wherein each of said first and second measurements comprises a continuous measurement.

Claim 241. (previously presented) A method according to claim 214, and wherein each of said first and second measurements comprises a kinetic monitoring.

Claim 242. (previously presented) A method according to claim 214, comprising producing said plurality of metallic islands on said substrate.

Claim 243. (previously presented) A method according to claim 217, comprising annealing said plurality of metallic islands carried by said substrate prior to said adsorbing said adsorbing chemical substance onto said plurality of metallic islands.

Claim 244. (previously presented) A method according to claim 214, comprising annealing said plurality of metallic islands on said transparent substrate, said annealing comprising heating said plurality of metallic islands on said transparent substrate for up to 24 hours at up to 400°C.

Claim 245. (previously presented) A method according to claim 214, comprising annealing said plurality of metallic islands on said transparent substrate, said annealing comprising heating said plurality of metallic islands on said transparent substrate for up to 4 hours at up to 350°C.

Claim 246. (previously presented) A method according to claim 216, and wherein each of said first and second measurements comprises a peak of maximal absorbance.

Claim 247. (previously presented) A method according to claim 216, and wherein said comparing said first and second measurements comprises determining a change in an absorbance of said sampling moiety at a specific wavelength.

Claim 248. (previously presented) A method according to claim 213, wherein said first structure comprises an intermediate layer carrying said plurality of spaced-apart metallic islands and carried by said substantially transparent substrate.

Claim 249. (previously presented) A method according to claim 248, and wherein each of said first and second measurements comprises performing a real-time measurement.

Claim 250. (previously presented) A method according to claim 216, and wherein each of said first and second measurement comprises a continuous measurement.

Claim 251. (previously presented) A method according to claim 216, and wherein each of said generating a first measurement and said generating a second measurement comprises performing kinetic monitoring.

Claim 252. (previously presented) A method according to claim 216, comprising producing the plurality of metallic islands on the intermediate layer on the transparent substrate.

Claim 253. (previously presented) A method according to claim 252, and wherein said producing said plurality of metallic islands includes producing said plurality of metallic islands from at least one of the following: gold, silver, copper, titanium, vanadium, chromium, steel, at least one ultra-thin layer of a metal, a binary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium; or a ternary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium.

Claim 254. (previously presented) A method according to claim 252, and wherein said producing said plurality of metallic islands comprises evaporating metal and depositing it on said intermediate layer.

Claim 255. (previously presented) A method according to claim 252, and wherein said producing said plurality of metallic islands comprises sputtering metal and depositing it on said intermediate layer.

Claim 256. (previously presented) A method according to claim 252, and wherein said producing said plurality of metallic islands comprises electroless deposition of metal onto said intermediate layer.

Claim 257. (previously presented) A method according to claim 252, and wherein said producing said plurality of metallic islands comprises electrolytic deposition of metal onto said intermediate layer.

Claim 258. (previously presented) A method according to claim 252, and wherein said producing said plurality of metallic islands comprises hot-melt deposition of metal onto said intermediate layer.

Claim 259. (previously presented) A method according to claim 216, comprising annealing said plurality of metallic islands on said intermediate layer on said transparent substrate.

Claim 260. (previously presented) A method according to claim 218, comprising annealing said plurality of metallic islands performed prior to said producing the adsorbing moiety, said producing thereby performed by adsorbing the adsorbing chemical substance onto the annealed plurality of metallic islands.

Claim 261. (previously presented) A method according to claim 259, and wherein said annealing comprises heating said plurality of metallic islands on said intermediate layer on said transparent substrate for up to 24 hours at up to 400°C.

Claim 262. (previously presented) A method according to claim 260, and wherein said annealing comprises heating said plurality of metallic islands on said

intermediate layer on said transparent substrate for up to 4 hours at up to 350°C.

Claim 263. (currently amended) An apparatus for analysis of an at least one predetermined chemical substance received from a sample, comprising:

a transmitter comprising a generator of electromagnetic energy ~~configured to emit chosen electromagnetic radiation~~;

a first structure comprising a substantially transparent substrate carrying a plurality of spaced-apart metallic islands on said substrate, said first structure thereby having a first characteristic of a surface plasmon absorption with respect to said electromagnetic radiation , and wherein said first structure is capable of adsorbing thereon the at least one predetermined chemical substance thereby forming a second structure comprising said substrate carrying a moiety including said plurality of spaced-apart metallic islands and the sampled chemical substance, said second structure thereby having a second different characteristic of a surface plasmon absorption with respect to said electromagnetic radiation;

a detector configured to receive said electromagnetic radiation being emitted by said transmitter and transmitted through the structure, and to generate a measurement of the received radiation, a processor operative to receive a first and a second measurement from the detector, to identify plasmon absorption, so as to allow generation, based on the identified plasmon absorption, at least one of a quantitative indication and a qualitative indication of at least one of: said chemical substance-metallic islands moiety, a functionality of said chemical substance-metallic islands moiety, said plurality of metallic islands, a functionality of

said plurality of metallic islands, said chemical substance and a functionality of said chemical substance.

Claim 264. (previously presented) An apparatus of claim 263, wherein said transmitter comprises a laser, said laser emitting said electromagnetic radiation.

Claim 265. (previously presented) An apparatus of claim 263, wherein said transmitter comprises a light source placed upstream of a filter monochromator which is placed upstream of the structure, said light source emitting said emitted electromagnetic radiation.

Claim 266. (previously presented) An apparatus of claim 263, wherein said transmitter comprises a wavelength scanning generator of electromagnetic radiation, said generator being placed upstream of the structure and upstream of the sample.

Claim 267. (previously presented) An apparatus of claim 263, wherein said transmitter comprises a light source being externally placed with respect to the structure, said light source emitting said emitted electromagnetic radiation.

Claim 268. (previously presented) An apparatus of claim 263, wherein said transmitter comprises a directional light source, said light source emitting said emitted electromagnetic radiation.

Claim 269. (previously presented) An apparatus of claim 263, wherein said first structure comprises an intermediate layer carried by said substrate and carrying said plurality of metallic islands.

Claim 270. (previously presented) An apparatus according to claim 263, and wherein said substrate comprises at least one of the following: glass, plastic, polystyrene, a polymeric material, an inorganic oxide, quartz and mica.

Claim 271. (previously presented) An apparatus according to claim 263, and wherein said substrate has a thickness of up to 5 mm.

Claim 272. (previously presented) An apparatus according to claim 263, and wherein said plurality of metallic islands includes metallic islands comprising at least one of the following: gold, silver, copper, titanium, vanadium, chromium, steel, at least one ultra-thin layer of a metal, a binary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium; or a ternary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium.

Claim 273. (previously presented) An apparatus according to claim 263, and wherein said metallic islands are gold islands.

Claim 274. (previously presented) An apparatus according to claim 263, and wherein said plurality of metallic islands includes metallic islands having a thickness

of up to 400 Ångstrom units.

Claim 275. (previously presented) An apparatus according to claim 274, wherein the thickness is between 10 to 100 Ångstrom units.

Claim 276. (previously presented) An apparatus according to claim 269, and wherein said plurality of metallic islands includes metallic islands from at least one of the following: gold, silver, copper, titanium, vanadium, chromium, steel, at least one ultra-thin layer of a metal, a binary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium; or a ternary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium.

Claim 277. (previously presented) An apparatus according to claim 276, and wherein said plurality of metallic islands comprises metallic islands evaporated onto said substrate.

Claim 278. (previously presented) An apparatus according to claim 276, and wherein said plurality of metallic islands comprises metallic islands sputtered on said substrate.

Claim 279. (previously presented) An apparatus according to claim 276, and wherein said plurality of metallic islands comprises metallic islands produced by electroless deposition of metal on said substrate.

Claim 280. (previously presented) An apparatus according to claim 276, wherein said plurality of metallic islands comprises metallic islands produced electrolytic deposition of metal on said substrate.

Claim 281. (previously presented) An apparatus according to claim 276, and wherein said plurality of metallic islands comprises hot-melt deposition of metallic islands produced by hot-melt deposition of metal on said substrate.

Claim 282. (previously presented) An apparatus according to claim 263, comprising said plurality of metallic islands annealed on said substrate.

Claim 283. (previously presented) An apparatus according to claim 269, and wherein said intermediate layer comprises at least one metal oxide.

Claim 284. (previously presented) An apparatus according to claim 269, and wherein said at least one metallic oxide comprises at least one of the following: chromium oxide, titanium oxide, nickel oxide, lead oxide, and tin oxide.

Claim 285. (previously presented) An apparatus according to claim 269, and wherein said intermediate layer comprises a metal.

Claim 286. (previously presented) An apparatus according to claim 269, and wherein said intermediate layer comprises at least one of a nitrogen containing

moiety, a sulfur containing moiety, and an inorganic hydrogen-containing moiety.

Claim 287. (previously presented) An apparatus according to claim 269, and wherein said intermediate layer comprises at least one of the following chemical groups: sulfhydryl, thiocyanate, thiol, sulfide, disulfide, and amine.

Claim 288. (previously presented) An apparatus according to claim 269, and wherein said intermediate layer comprises an organic layer.

Claim 289. (previously presented) An apparatus according to claim 263, and wherein the sample chemical substance and said plurality of metallic islands is bonded by at least one of the following interactions in the sampling moiety: a hydrogen bond, an ionic bond, a covalent bond, a Van der Waals force, an electrostatic force, and a physical force.

Claim 290. (previously presented) An apparatus according to claim 263, wherein the emitted electromagnetic radiation comprises electromagnetic radiation in the ultraviolet/visible/infra-red range.

Claim 291. (previously presented) An apparatus according to claim 263, and wherein the emitted electromagnetic radiation comprises electromagnetic radiation in the range of 300-1100 nm.

Claim 292. (previously presented) An apparatus according to claim 263, and wherein the emitted electromagnetic radiation is in the ultraviolet/visible/infra-red range.

Claim 293. (previously presented) An apparatus according to claim 263, and wherein the emitted electromagnetic radiation is in the range of 300-1100 nm.

Claim 294. (previously presented) An apparatus of claim 263, wherein said first structure comprises said substrate carrying a moiety including a chemical substance and said plurality of spaced-apart metallic islands, said chemical substance is selected to adsorb thereon said at least one chemical substance to form a sampled chemical substance-adsorbing chemical substance-metallic islands moiety on said substrate, thereby enabling formation of the second structure comprising said substrate carrying the sampling moiety and having the second different surface plasmon absorption characteristic and second different transmission profile as compared to that of the first structure

Claim 295. (previously presented) Apparatus according to claim 294, and wherein said electromagnetic radiation comprises electromagnetic radiation in the ultraviolet/visible/infra-red range.

Claim 296. (previously presented) Apparatus according to claim 294, and wherein said electromagnetic radiation comprises electromagnetic radiation in the

range of 300-1100 nm.

Claim 297. (previously presented) Apparatus according to claim 294, and wherein said transparent substrate includes at least one of the following: glass, plastic, polystyrene, a polymeric material, an inorganic oxide, quartz and mica.

Claim 298. (previously presented) Apparatus according to claim 294, and wherein said transparent substrate has a thickness of up to 5 mm.

Claim 299. (previously presented) Apparatus according to claim 294, and wherein said plurality of metallic islands includes at least one of the following: gold, silver, copper, titanium, vanadium, chromium, steel, at least one ultra-thin layer of a metal, a binary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium; or a ternary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium.

Claim 300. (previously presented) Apparatus according to claim 294, and wherein said metallic islands are gold islands.

Claim 301. (previously presented) Apparatus according to claim 294, and wherein said metallic islands have a thickness of up to 400 Ångstrom units.

Claim 302. (previously presented) Apparatus according to claim 301, and

wherein the thickness is between 10 to 100 Ångstrom units.

Claim 303. (previously presented) Apparatus according to claim 263, and wherein said processor is operative to perform comparing of said first and second measurements comprising a peak of maximal absorbance to determine a change in the absorbance at said peak.

Claim 304. (previously presented) Apparatus according to claim 263, and wherein said processor is operative to perform comparing of said first and second measurements comprising an absorbance of said sampling moiety at a specific wavelength to determine a change in the absorbance at said specific wavelength.

Claim 305. (previously presented) Apparatus according to claim 294, and wherein said detector is further operative to perform real-time measurements.

Claim 306. (previously presented) Apparatus according to claim 294, and wherein said detector is further configured to perform continuous measurements.

Claim 307. (previously presented) Apparatus according to claim 294, and wherein said detector is further configured to perform kinetic monitoring.

Claim 308. (previously presented) Apparatus according to claim 295, wherein said plurality of metallic islands on the transparent substrate is produced by a metal

deposition.

Claim 309. (previously presented) Apparatus according to claim 308, wherein said metal deposition comprises a deposition from at least one of the following: gold, silver, copper, titanium, vanadium, chromium, steel, at least one ultra-thin layer of a metal, a binary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium; or a ternary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium.

Claim 310. (previously presented) Apparatus according to claim 308, wherein said metal deposition comprises evaporation of metal.

Claim 311. (previously presented) Apparatus according to claim 308, wherein said metal deposition comprises sputtering of metal.

Claim 312. (previously presented) Apparatus according to claim 308, wherein said metal deposition comprises an electroless deposition of metal.

Claim 313. (previously presented) Apparatus according to claim 308, wherein said metal deposition comprises an electrolytic deposition of metal.

Claim 314. (previously presented) Apparatus according to claim 308, and wherein said metal deposition comprises a hot-melt deposition of metal.

Claim 315. (previously presented) Apparatus according to claim 308, wherein said plurality of metallic islands on said transparent substrate is annealed.

Claim 316. (previously presented) Apparatus according to claim 308, wherein said plurality of metallic islands is annealed for up to 24 hours at up to 400°C.

Claim 317. (previously presented) Apparatus according to claim 316, wherein said plurality of metallic islands is annealed for up to 4 hours at up to 350°C.

Claim 318. (previously presented) Apparatus according to claim 294, wherein said first structure comprises an intermediate layer between said transparent substrate and said metallic islands.

Claim 319. (previously presented) Apparatus according to claim 318, and wherein said intermediate layer comprises at least one metal oxide.

Claim 320. (previously presented) Apparatus according to claim 318, and wherein said at least one metallic oxide comprises at least one of the following: chromium oxide, titanium oxide, nickel oxide, lead oxide and tin oxide.

Claim 321. (previously presented) Apparatus according to claim 320, and wherein said intermediate layer comprises a metal.

Claim 322. (previously presented) Apparatus according to claim 318, and wherein said intermediate layer comprises at least one of a nitrogen containing moiety, a sulfur containing moiety and an inorganic hydrogen-containing moiety.

Claim 323. (currently amended) Apparatus according to claim 322 ~~327~~, and wherein said intermediate layer comprises at least one of the following chemical groups: sulfhydryl, thiocyanate, thiol, sulfide, disulfide and amine.

Claim 324. (previously presented) Apparatus according to claim 318, and wherein said intermediate layer comprises an organic layer.

Claim 325. (previously presented) An apparatus according to claim 318, and wherein said transparent substrate comprises at least one of the following: glass, plastic, polystyrene, a polymeric material, an inorganic oxide, quartz and mica.

Claim 326. (previously presented) An apparatus according to claim 318, and wherein said transparent substrate has a thickness of up to 5 mm.

Claim 327. (previously presented) An apparatus according to claim 318, and wherein said plurality of metallic islands includes metallic islands comprising at least one of the following: gold, silver, copper, titanium, vanadium, chromium, steel, at least one ultra-thin layer of a metal, a binary alloy of the following elements: gold, silver, copper, titanium, vanadium, and chromium; or a ternary alloy of the following

elements: gold, silver, copper, titanium, vanadium, and chromium.

Claim 328. (previously presented) An apparatus according to claim 318, and wherein said metallic islands are gold islands.

Claim 329. (previously presented) An apparatus according to claim 318, and wherein said plurality of metallic islands includes metallic islands having a thickness of up to 400 Ångstrom units.

Claim 330. (previously presented) An apparatus according to claim 329, wherein the thickness is between 10 to 100 Ångstrom units.